

Basin Plan Amendment for the Development of Methylmercury Total Maximum Daily Load for the Lower American River and Lake Natoma

Stakeholder Meeting
September 16, 2010



Agenda

- Guiding Principles
- Straw proposal
- Next Steps

LAR Tools and Process

- Delta Guiding Principles
 - How can we use these?
- Straw proposal options for:
 - Numeric targets for fish tissue
 - Implementation alternatives
 - Develop load and waste load allocations
- Preliminary draft Basin Plan amendment

Key Guiding Principles

- Address both inorganic Hg and MeHg for all sources
- Be adaptive, include program review
- Include near-term actions to reduce exposure
- Recognize competing and potentially conflicting activities

Under federal law, a control program must be developed to reduce fish mercury levels

Straw Proposal

- Fish tissue targets
- Sources
- Control Options
- Phased Control Program
- CEQA
- Costs
- Allocations, margin of safety
- Monitoring

Mercury Reduction Strategy

- Reducing concentrations of methylmercury in water column to reduce fish tissue mercury concentrations.
 - Reduce discharges of MeHg
 - Reduce methylation
 - Adjust factors that control the rate of methylation production or bioaccumulation
 - Promote de-methylation
 - Reduce concentrations of THg in sediment (one factor controlling MeHg)

Scientific Background

Fish Tissue Mercury Concentration Reductions After Mercury Source Controls

Mercury Source	Control Measures	Biotic Change
Municipal and industrial discharge	Reduced or Eliminated discharge	22 to 96% reductions in fish tissue
	Natural burial or dredging of contaminated sediments	
	Treated groundwater or pond discharge	
	River bank erosion controls	
Atmospheric deposition	Reduced atmospheric mercury input by 60%.	30% reduction in 6 years

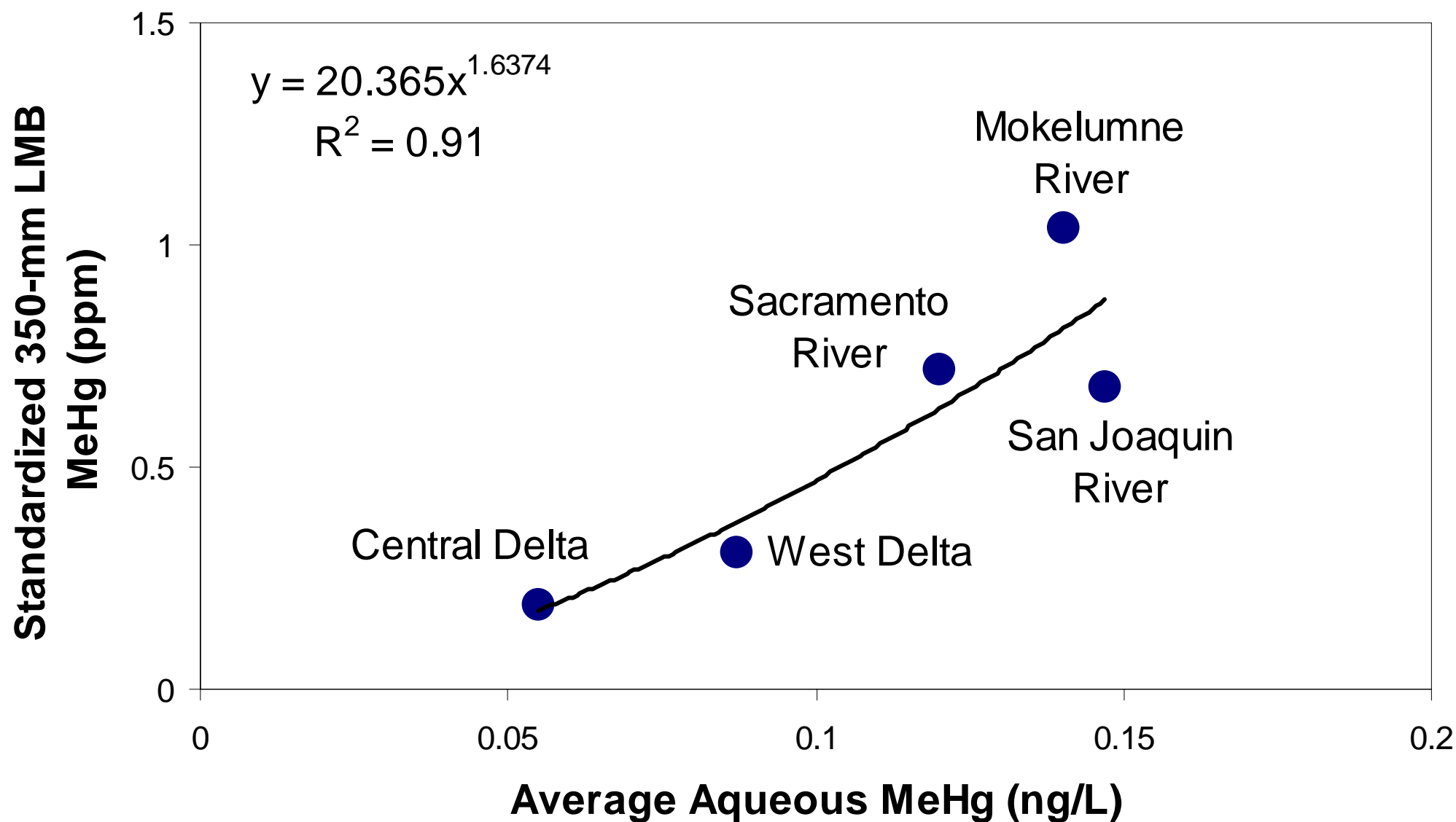
Summary of Delta TMDL Table 3.2.

Scientific Background

- Lake bioaccumulation study.
- Data suggest that:
 - Largemouth bass tissue Hg concentration is correlated with sediment total mercury concentrations.
 - Other factors that were found to have relationships with LMB tissue concentrations
 - Positive: Degree of lake stratification
 - Negative: [dissolved organic carbon], [sulfate], [chlorophyll-A], and specific conductivity.

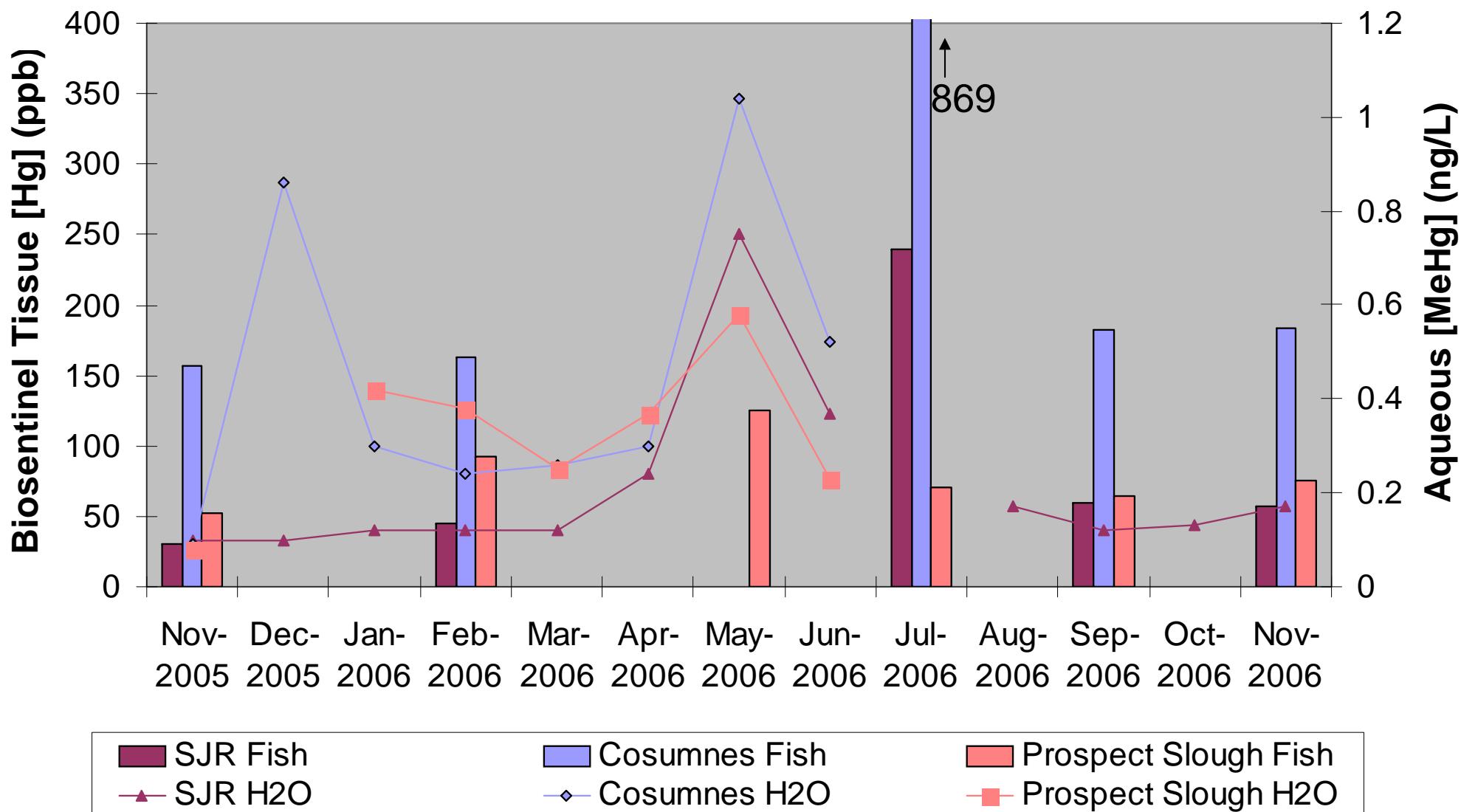
Scientific Background

Delta Subarea Aqueous MeHg vs. LMB MeHg



Scientific Background

Biosentinel Fish Tissue Mercury Concentrations and Aqueous Methylmercury Concentrations



Summarized from: Foe, 2008; SFEI, 2007; and Slotton, 2008.

Mercury Reduction Strategy

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Possible Actions

- Inorganic mercury removal or sequestration
 - Erosion control for contaminated sediment
 - Cleanup of mine tailings adjacent to Lake Natoma or the LAR
 - Cleanup or cap contaminated sediment in lake and river bottoms
- Water management in Lake Natoma or Folsom Lake
 - Flows, water depth, diurnal fluctuation, aeration
- Reduce Hg/MeHg from Folsom Lake
- Projects in Hinkle, Alder, and Willow Creeks
- Land development- Folsom and south of Hwy 50
 - Develop plans to minimize mercury impacts from land use changes, mine tailings
- Conduct studies to identify feasible total mercury or methylmercury control options
- BMPs for methylmercury and erosion
- Other actions?

Potential agencies and entities responsible for TMDL activities

- CA Dept Parks and Recreation (Lake Natoma)
- US Bureau of Reclamation (Lake Natoma)
- Cities of Folsom, Rancho Cordova, and Sacramento (storm water runoff)
- CA Dept Fish & Game (NPDES)
- County of Sacramento Parks and Recreation (Parkway)
- CA Dept General Services (NPDES)
- Aerojet Corporation (NPDES)
- Other nonpoint sources?

Implementation

- Adaptive management approach
 - Review new information
 - Re-evaluate targets, control options, allocations, etc.
 - Revise control program to improve effectiveness
- Phased timeline

Phase 1

Phase 2

Effective Date

20 years

Methylmercury Studies:
Yr 1: develop
workplans
Yr 2-6: conduct studies
Yr 7: report MeHg
management plans

TMDL Review

Implement some total
mercury and erosion
control measures

Implement
methylmercury and
total mercury controls
to meet allocations by
Year 20 compliance
date.

TMDL Definition

- The amount of a specific pollutant that a water body can receive and still meet water quality standards.

Also called assimilative (or loading) capacity

TMDL = wasteload allocations + load allocations
(point sources) (nonpoint sources)

LAR Assimilative Capacity:

~40-95% lower than existing conditions,
depending on the fish tissue target

- 40% reduction will protect wildlife, and humans eating more than 1 meal/week of mixed trophic level fish.
- 95% reduction will protect humans eating 4 to 5 meals/week of large (500 mm) TL4 fish.

How to assign allocations?

TMDL = wasteload allocations + load allocations
(point sources) (nonpoint sources)

Each point and nonpoint source must be assigned an allocation.

Allocation options:

- same % reduction to all sources?
- variable % reduction, depending on source?

Additional BPA Staff Report Components

- CEQA evaluation of potential environmental impacts due to implementing the control program
- Cost estimates for possible implementation activities

Next Steps

- Stakeholders provide feedback on proposal by **5 October**.
- Staff compiles comments and develops alternatives
- Staff drafts preliminary Basin Plan amendment text for stakeholder review at October meeting.